

3/24/04

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application. Claims 1-24 are canceled without prejudice. Claims 25-48 are new.

Listing of the Claims:

1-24 Canceled

25. (New) A method for facilitating handover between a base station pair in a communication system comprising:

computing a cost function for the base station pair dependent on a relative received signal strength and an adaptive hysteresis factor;

selecting a base station from the pair dependent on the cost function and a second factor, wherein the second factor is either base station load or physical distance between a user terminal and the base station.

26. (New) The method of claim 25, wherein the physical distance is derived from a propagation delay determined from a relative time-of-arrival of a broadcast message transmitted from the base station synchronized according to a common timing reference.

27. (New) The method of claim 25, wherein the physical distance is derived from a time-of-arrival of a time-stamped message transmitted from the base station.

28. (New) The method of claim 25, wherein determination of the adaptive hysteresis factor comprises:

computing the standard deviation of a residual signal associated with transmission from a first base station to obtain an estimate of the first base station signal strength fluctuation;

computing the standard deviation of a residual signal associated with transmission from a second base station to obtain an estimate of the second base station signal strength fluctuation;

multiplying the sum of the estimated station signal strength fluctuation of the first and second base station with a scaling factor to obtain the adaptive hysteresis factor.

29. (New) The method of claim 28, wherein the scaling factor is in the range of 1.5 to 2.

30. (New) The method of claim 28, wherein computing the standard deviation of the residual signal associated with transmission from a base station comprises:

averaging measured signal strength associated with transmission from the base station over a first interval to obtain a first average;

averaging measured signal strength associated with transmission from the base station over a second interval to obtain a second average, wherein the second interval is shorter than the first interval;

subtracting the first average from the second average to obtain the residual signal; and

determining the standard deviation of the residual signal.

31. (New) The method of claim 30, wherein the first and second intervals each have a fixed length.

32. (New) The method of claim 30, wherein the standard deviation is recursively determined over a span of transmission samples from the first base station.

33. (New) The method of claim 32, wherein determining the standard deviation includes using a memory factor for weighting.

34. (New) A method for computing an adaptive hysteresis factor to facilitate handover between a base station pair in a communication system comprising:

computing the standard deviation of a residual signal associated with transmission from a first base station to obtain an estimate of the first base station signal strength fluctuation;

computing the standard deviation of a residual signal associated with transmission from a second base station to obtain an estimate of the second base station signal strength fluctuation;

multiplying the sum of the estimated station signal strength fluctuation of the first and second base station with a scaling factor to obtain the adaptive hysteresis factor.

35. (New) The method of claim 34, wherein computing the standard deviation of the residual signal associated with transmission from a base station comprises:

averaging measured signal strength associated with transmission from the base station over a first interval to obtain a first average;

averaging measured signal strength associated with transmission from the base station over a second interval to obtain a second average, wherein the second interval is shorter than the first interval;

subtracting the first average from the second average to obtain the residual signal;
and

determining the standard deviation of the residual signal.

36. (New) A machine-readable medium having stored thereon a set of machine-executable instructions that, when executed by a data-processing system, cause the system to perform a method for facilitating handover between a base station pair in a communication system comprising:

computing a cost function for the base station pair based on a relative received signal strength and an adaptive hysteresis factor;

selecting a base station from the pair dependent on the cost function and a second factor, wherein the second factor is either base station load or physical distance between a user terminal and the base station.

37. (New) The machine-readable medium of claim 36, wherein the physical distance is derived from a propagation delay determined from a relative time-of-arrival of a broadcast message transmitted from the base station synchronized according to a common timing reference.

38. (New) The machine-readable medium of claim 36, wherein determination of the adaptive hysteresis factor comprises:

computing the standard deviation of a residual signal associated with transmission from a first base station to obtain an estimate of the first base station signal strength fluctuation;

computing the standard deviation of a residual signal associated with transmission from a second station to obtain an estimate of the second base station signal strength fluctuation;

multiplying the sum of the estimated station signal strength fluctuation of the first and second base station with a scaling factor to obtain the adaptive hysteresis factor.

39. (New) The machine-readable medium of claim 38, wherein the scaling factor is in the range of 1.5 to 2.

40. (New) The machine-readable medium of claim 38, wherein computing the standard deviation of the residual signal comprises:

averaging measured signal strength associated with transmission from the base station over a first interval to obtain a first average;

averaging measured signal strength associated with transmission from the base station over a second interval to obtain a second average, wherein the second interval is shorter than the first interval;

subtracting the first average from the second average to obtain the residual signal;
and

determining the standard deviation of the residual signal.

41. (New) The machine-readable medium of claim 40, wherein the first and second intervals each have a fixed length.

42. (New) The machine-readable medium of claim 40, wherein the standard deviation is recursively determined over a span of transmission samples from the first base station.

43. (New) The machine-readable medium of claim 40, wherein determining the standard deviation includes using a memory factor for weighting.

44. (New) A processing unit for facilitating handover between a base station pair in a communication system, comprising:

a base station selection unit to select a base station dependent on the inputs from a received signal strength measurement (RSSI) unit, an adaptive hysteresis calculation unit, and a distance calculation unit.

45. (New) The processing unit of claim 44, wherein the base station selection unit selects the base station dependent on a cost function and a base station load input.

46. (New) The processing unit of claim 44, wherein the adaptive hysteresis calculation unit provides to the base station selection unit an adaptive hysteresis factor dependent upon the standard deviation of a residual signal from each base station of the base station pair.

47. (New) The processing unit of claim 46, wherein the adaptive hysteresis calculation unit recursively determines the standard deviation of the residual signal from each base station of the base station pair.

48. (New) The processing unit of claim 46, wherein the adaptive hysteresis calculation unit determines the standard deviation of the residual signal using a memory factor for weighting.